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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

*Evaluation of Progress in Established Physiochemical Treatments in Neuropsychiatry**

II. THE USE OF INSULIN IN MENTAL ILLNESS

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History

In 1927 after experimenting on mice, Sakel attempted with insulin to relieve withdrawal symptoms of drug addiction and later other states of excitation. At first he tried to avoid coma or convulsions, but soon, observing how psychotic symptoms were relieved if shock (coma or convulsions) occurred, he recognized its therapeutic value.

In this way Sakel[1] developed insulin shock therapy. When insulin in some cases did not induce convulsions he gave camphor or metrazol to cause them. Late in 1933 in Vienna after 5 years' clinical experience he announced the results of his insulin convulsive therapy in schizophrenia and acute confusional insanity.[2]

Technic of Insulin Coma Therapy

Insulin therapy requires hospital care, great professional skill in management and expert nursing. Even with these precautions, complications and fatalities are occasionally reported. The treatment to a certain extent can be learned from lectures or reading, but actual experience is necessary for proficiency.

We start the patient with an initial dose of 20 units at 6:00 a. m., withholding breakfast. The dosage is increased 5 or 10 units daily until shock phase or coma is reached. Until the shock dosage is reached, the patient is given breakfast at 10:00 a. m. After the proper dosage is reached he becomes somnolent for about an hour.

After the first hour, hypoglycemic reaction begins with pronounced salivation; at first, both saliva and perspiration are thick, but later become watery and thin. As shock progresses, memory becomes more and more clouded; sometimes the patient becomes euphoric, speech difficulties appear and he gradually loses the ability to respond verbally. The temperature begins to fall and may, after 3 hours, drop as low as 90 degrees rectally. The pulse rate also falls as a typical pattern, usually rising to about 120 and then dropping as shock deepens. If the rate falls below 60, medullary involvement is present and the shock should be terminated.

During the second hour subshock symptoms are mainly clouded consciousness, aphasic reactions, motor excitement, euphoria, confusion, fine tremor, exacerbation of psychotic symptoms and falling temperature.

During the third hour (light stupor stage) there is complete loss of consciousness, primitive movements (forced grasping and sucking), release of basal ganglia and hypothalmus, with clonic and myoclonic twitchings or other involuntary movements such as torsion, spasms and motor restlessness. Dilated pupils, screaming, increased pulse rate and increased exteroceptive sensitivity may appear.

During the fourth hour with release of midbrain control and suppression of the pyra-

*From lectures given at Winter Veterans Administration Hospital, Topeka, Kansas, January 17, 1947; and at the Institute of Living, Hartford, Connecticut, December 17, 1947.

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midal system, deep stupor occurs. Neurologic manifestations are increased tonus, coarse tremors, tonic spasms, conjugate deviation of the eyes, pupils large or small, pulse rate increased or decreased and signs of paralysis of pyramidal tract function.

During the fifth hour, with release of medullary control, there is a deep coma, with tonic extension spasms and depression of tendon reflexes. With deeper coma appear pinpoint pupils, absence of superficial reflexes, fixed eyes and slow pulse rate.

Indications for premature termination of treatment are sudden temperature rise, convulsions, pulse rate below 60, severe respiratory disturbances, pulmonary edema, sudden pallor or cyanosis or vomiting.

Shock is terminated preferably by intravenous glucose, 20-50 cc. of 50 per cent solution, followed by oral feeding of sweetened orange juice and jelly sandwiches. Nasal gavage of 200 gms. of glucose in coffee or orange juice can be used but recovery is slower. The patient should respond within a few minutes after the intravenous glucose and should drink orange juice readily. If consciousness is not promptly regained, special measures may be necessary, such as further glucose, intravenous fluids and perhaps some stimulants.

Upon termination of shock, a cheerful atmosphere is maintained, without questioning, and euphoric reaction is encouraged. It is necessary to observe the patient carefully the remainder of the day. Lunch is given at the usual time, and activity programs are resumed in the afternoon, but if secondary reactions occur, glucose or extra feedings are given at once.

The dosage of insulin to produce coma varies greatly, from 35 units to over 400, so that no rule about dosage can be followed. Treatments are given daily for 5 or 6 days, then a rest day, in courses up to 20 comas. The depth and length of coma desirable for best therapeutic results likewise vary widely, according to reports from different clinics. Some physicians are satisfied with deep stupor of one hour daily while others believe deep coma for 2 hours is essential. Likewise, there is no uniformity of opinion concerning the number of comas necessary for best results. It is our belief that if a favorable response to treatment is not shown by 20 treatments further treatment is of doubtful value.

Each day's reaction to shock dosage of insulin must be studied in order to estimate the next day's dose. If shock reaction is progressing favorably upon an established dose, it is continued. If the patient is too slow in going down into coma, the next day's dose is elevated. If there is too rapid coma or delay in regaining consciousness, the subsequent dose is reduced. The treatment must be carefully supervised and individualized from day to day, preferably under the same therapist, in order to judge reactions accurately and to avoid complications. Whenever prolonged reactions develop, the treatments must be discontinued and more rest periods given. Many other factors may have to be evaluated and proficiency in treatment comes only from experience.

Complications

The most common complication is protracted or prolonged coma or delayed reaction. A case is reported by Wechsler.[3] A schizophrenic female patient unimproved by both convulsive shock treatment and prolonged narcosis was given two prolonged insulin comas, the first of which lasted 4 hours and 40 minutes, the second 10 hours. The patient failed to arouse from the second and remained in coma 57 days, during which she had to be fed artificially. Her physical condition 6 months later was fairly good but she was disoriented, had defective memory and confabulatory tendencies and was dull and highly suggestible.

Although many recommend prolonged coma for refractory cases, it is exceedingly dangerous; the mortality is high and justification for its use is questionable. Occasionally despite the most careful watching, a protracted coma will follow the ordinary 1-2 hour treatments. Death may then result from hyperpyrexia or status epilepticus, which account for most fatalities.

True, patients are often benefited by prolonged coma. One of my patients improved very slowly from a vegetative state after one week's coma, did not gain efficiency for several months, but for the past 10 years he has farmed successfully, with no evidence of return of severe schizophrenia. A case of severe paranoid schizophrenia in a man of 27 was treated by Kalichman[4] by combined

insulin and electroshock, with prolonged coma for 60 hours. The patient was then forced into an activity program and psychotherapy was introduced. This combination treatment effected a good result, in an apparently hopeless situation.

The serious complication of pulmonary edema may occur in even the best managed insulin treatment. Gottesfeld, Anglas Quintana and Delgado Fourzan[5] review other reported cases, discuss likely physiologic mechanisms and add two cases of acute pulmonary edema complicating insulin therapy. In one case an anterior coronary thrombosis was found; in the other, a lung abscess followed acute pulmonary edema and status epilepticus. Both patients had a history of allergy prior to psychosis and both showed specific sensitiveness before insulin treatment. The authors suggest that allergy may be a factor producing pulmonary edema and therefore careful evaluation of asthma, urticarias and sensitivity to foods and pollens should precede insulin treatment.

Other complications are convulsive seizures, either single or approaching the status type. Frequently this outcome is seen with a dry shock and a rise in temperature. Treatment is terminated immediately if a true convulsion develops. When circulatory collapse signs occur with a convulsive tendency, a dangerous state of vasomotor collapse is present and calls for emergency measures. True status epilepticus, although very rare, is extremely serious, may not respond to treatment and may be fatal. By prompt attention to an initial seizure I believe it can be avoided.

Pulmonary edema along with collapse of the circulatory system is exceedingly serious and any tendency of this sort calls for emergency procedures. Progressive cyanosis is the most valuable warning symptom.

Prognostic Factors and Therapeutic Results

Although insulin therapy has not been definitely evaluated, it can improve the prognosis in many early cases of schizophrenia, according to Solomon.[6] Patients with schizophrenia have a certain tendency to recovery which treatment may substantially increase. He cites the summary of the New York Commission: Treated patients have 1½ times greater chance of leaving the hospital greatly improved, if not wholly well; they have a better chance to remain well; and relapsed patients are more likely to improve than untreated ones. Solomon stresses the importance of correct diagnosis since insulin treatments are not cheap, easy nor free from danger. This practical discussion gives little new material but emphasizes accurately the present concept of insulin shock therapy.

Tennent[7] considers the prognosis for the treatment better in acute paranoidal states than in acute catatonia, but worse in chronic paranoia than in chronic catatonia. The important factors in prognosis are the duration of symptoms, the prepsychotic type of personality and the nature of the onset of illness. The patient who is not satisfied with his fantasy of an unreal world has a better chance for recovery. Tennent finds clinical improvement always accompanied by gain in weight. Unimproved cases show Rorschach records resembling those in organic brain disease. Tennent believes the degree of reversibility of pathologic changes depends largely upon the depth of coma, but he is uncertain whether therapeutic results depend upon organic brain damage.

A large series of schizophrenic patients treated with insulin and followed for 7 years is reported by Gralnick.[8] Although about half, or 268, of the total 554 were paroled at some time, yet 60 per cent, or 317, were back in the hospital by the end of the survey. Analysis of the cases showed that at any one time between the 4th and 6th year about half of the paroled had relapsed and were back in the hospital; after the 6th year 73 per cent of paroled patients had had relapses. Adding the total percentage of those never paroled after treatment to the percentage of those returned from parole gave a rate of 75 per cent eventual failures in the entire treated group. Only 30 per cent of those not discharged had been ill less than a year, while 52 per cent of the paroled group had a similar duration.

Gralnick[9] also reports a smaller group of 158 schizophrenics treated with insulin during two years, of whom one half were paroled. Instead of the expected 30-40 per cent of relapses only 19.3 per cent had returned after two years, an improvement he assigns to higher standards for parole. In general, he finds that women respond to treatment better

than men.

Coma is usually not induced for a week, in order to accustom the patient to therapist, nurses and new routines; nor is he allowed to see other patients in different stages of coma. Gralnick gives or is present at the injection, in order to observe and talk with patients and establish friendly relations. Charge nurses are picked for both efficiency and friendliness. Some patients with ideas of poisoning are suspicious and self-depreciatory. The psychotherapeutic attempt is to highlight the patients' good features, demanding nothing in return, thus helping them lose their suspiciousness and gain a sense of personal value. An important part of therapy is parole at the right psychological time. Sudden, unexplained relapses often stem from the therapist's zeal to give a set number of treatments. An example is a paranoid schizophrenic, aged 31, who came for treatment 6 months after the second attack in 4 years. After 16 insulin injections with only 4 comas she requested release, insisting she was well. Upon interview she was dismissed, and was still at work 8 months later.

From these studies Gralnick judges that insulin has definite value but is less effective than earlier reports signified. Worthwhile results occur only in illnesses of less than 3 years, and early response to treatment is a favorable sign. He also urges closer scrutiny of the psychologic aspect of treatment since favorable responses depend on the entire treatment procedure.

This caution is important. A definite technique should be developed and carried out, involving not only the physician's attitude toward the proper establishment of rapport, suggestion and insight, but also the education of an interested nursing staff, in order to utilize all psychotherapeutic aids. In brief, a total push program between treatments. Gralnick's observation that the patient's age or type of schizophrenia matters little is unsound, since catatonic types, either excited or depressed, with strong affective components, have a definitely better outcome.

In his study of Ontario hospitals Penrose[10] found 42 per cent of 1,600 insulin and metrazol treated patients (statistically not separated) still in hospitals 5 years after treatment. He infers that shock therapy tends to hasten discharge of those heading for recovery but does not alter the ultimate outcome in a 5-year period.

One of the most important determinations of the efficacy of insulin therapy is the report of the Temporary Commission on State Hospital Problems of New York.[11] It compared 1128 patients treated with insulin between January 1, 1937 and June 30, 1942, with 876 similar patients untreated by shock therapy. Only 58.8 per cent in the untreated group left the hospital, compared with 79.5 per cent of the insulin patients. Insulin subjects showed better results in each subgroup of dementia praecox, most notably in paranoia—79.4 per cent improved versus 52 per cent in untreated cases.

The hospitalization period was 3.5 months shorter per patient for the insulin group, which also had a larger proportion of patients still at home at the end of the study. Of all relapses, two-thirds returned within a year after release; thereafter relapses progressively decreased. Of relapses subsequently hospitalized, the insulin group spent 2 months more at home than in the hospital whereas the untreated spent 7½ months more in the hospital than at home. At the end of the survey, compared with 44 per cent of the untreated group, 58.9 per cent of all insulin patients were at home, had reached higher levels of usefulness and more of them were gainfully employed. Regardless of previous duration of illness or nature of onset, results in the insulin group were more satisfactory and the quality of recovery consistently better.

This study of a large number of cases, compared with controls, indicates that however disappointing or far from specific the treatment may be, results are yet good enough to warrant insulin in schizophrenia until better methods are found. The economic saving in hospitalization alone makes it worthwhile for all state hospitals.

Seemingly these findings disagree with those of Gralnick and of Penrose, who found progressively more relapses in a 5-7 year period. Their results are difficult to evaluate because they do not separate therapeutic procedures for schizophrenias and depressions.

Taylor[12] followed up, without controls, a smaller series of New Jersey state hospital cases. Of 214 schizophrenics treated with in-

sulin 153, or 71.5 per cent, were released; 5 years later 125 of the 153 (81.7 per cent) were out of the hospital and only 5 of these had returned at some time. Taylor computes that treatment kept these patients out of the hospital 2409 weeks, a saving of $24,000 to the state, figured at $10 a week per patient.

Proctor[13] found complete remissions in approximately half the cases of catatonic schizophrenia treated with insulin and in 20 to 50 per cent of hebephrenic and paranoid types. He recommends insulin for all schizophrenic states (except catatonia and simple types) with duration of symptoms for not more than 18 months. These observations agree with our experience except that the author neglects to point out the high incidence of relapses which cuts down below 50 per cent the rate of recoveries.

An interesting case reported by Kaplan[14] illustrates the great importance of combining psychologic treatment with insulin. The author utilized social and environmental aids and reeducative psychotherapy for many months to obtain good results with a hebephrenic patient. Undoubtedly many patients could be saved and relapses prevented by using the therapeutic aids and careful follow-up described in this report.

In nearly 5 years' military experience with schizophrenia Stockings[15] obtained complete remissions in 70 per cent of 300 cases, improvement in 15 per cent and failure in 15 per cent. The average hospital stay was 8-10 weeks. He sees favorable prognosis in most cases, but discusses recognition of the earliest symptoms and diagnostic signs, in order to pursue early and energetic treatment. He found that depressed types respond best to convulsive therapy, with 7-10 convulsions, while those with excitement and bizarre delusions or hallucinations did best with insulin, about 20 comas over a 6-week period.

Stockings' high percentage of recoveries probably indicates a large number of acute cases with affective admixtures. The extremely early treatment possible in army service may help explain his excellent results. Whether or not many of these acute episodes are correctly labeled as schizophrenic may also account for the high rate of recoveries. Military experience shows that these have a good prognosis regardless of type of treatment.

Recently Finiefs,[16] surveying 1,000 cases of schizophrenia, found that 446 untreated cases averaged a hospital stay of 8.3 months, as against only 5 months for the 563 treated by insulin, electroshock, or both. Follow up studies of these cases 5 years or more after discharge showed only 14.1 per cent outside the hospital in the untreated group, whereas 37.5 per cent of the treated cases were outside the hospital. Insulin therapy surpassed other therapies in speed, frequency, durability and better quality of improvement. These statistics agree with those of the New York Commission.

Subshock Insulin Therapy

Subshock doses of insulin were used prior to hypoglycemic coma in the treatment of psychoses principally to increase weight in undernourished patients. An early user of this therapy, I reported (with Semrad) that it facilitated psychiatric nursing of patients and made them more accessible to other treatments.[17] Weight gain often coincided with improvement in mental illness. The therapy has stood the test of time and is a valuable symptomatic treatment in all undernourished psychiatric states. Sub-coma doses of insulin also act as a sedative to control the patient's anxiety and excitement and thus permit better psychotherapeutic approach.

The enthusiastic reception of insulin coma led to neglect of this therapy, recently revived through war experience. It became an active, preferred method of treating combat neuroses, anxiety depressed states and certain psychoses. Sands[18] used subshock doses of 10 to 100 units extensively in both civilian and war neuroses. Treatment was given 2½ hours before breakfast 6 days a week for 2 to 5 weeks, until weight gain was satisfactory. Without a gain of 2 to 3 pounds in the first 10 days, chances for success were deemed small. Sands found recovery accelerated in anxiety and hysterical and neurasthenic states. The treatment also was useful in debilitated depressed patients prior to convulsive therapy and in subacute depressed states. For a larger series he cites results in 163 cases treated with subshock insulin and psychotherapy alone; in anxiety states and mixed states of anxiety and hysteria 60 per cent recovered or were much improved; in

hysterias 47 per cent; and in depressions 45 per cent. Only about 6 per cent of the series were failures. In 6 months 16 per cent had relapses. Hospitalization averaged 3-4 weeks.

A report by a special commission of civilian psychiatrists[19] studying war neuroses describes subshock insulin, often combined with prolonged narcosis, as used by several hospitals. In recent combat cases narcosis was maintained for 7 days by means of amytal; insulin was then continued for several weeks, or at least until the patient gained 10 pounds. Patients showed a large amount of emotionally charged dreamlike activity, later awoke in a more calm state, usually with mild depression. A British hospital found this combined treatment especially valuable in acute emotional disturbances aggravated by much loss of sleep. The gain in weight and relief of gastric complaints encouraged the patients.

Agreeing with the special commission's report, Fox[20] describes a modified form of insulin treatment used in an overseas hospital. Subshock insulin aided rapid rehabilitation of soldiers suffering mainly from acute anxiety states. Spontaneous verbalization was less disturbing than that obtained under barbiturate medication and a further advantage was the patient's full alertness at the end of treatment.

Sullivan[21] finds a 3-weeks course of twice daily subshock doses especially beneficial in all psychoses with schizophrenic symptoms, in depressive cases of mixed types and in all severe anxiety-tension types. Unresponsive cases are given a course of 12 electroshock treatments. Psychotherapy is used only to point out his improvement to the patient and to emphasize his good prognosis.

Subshock insulin, combined with psychotherapy especially in anxiety states and conversion hysterias, is in our opinion valuable symptomatic treatment in civilian practice in both psychoneuroses and psychoses. In depressions it is used routinely for the purpose of weight gains. Sometimes at the end of convulsion therapy the subshock insulin treatment is pushed to the stupor stage to help the patient get over tension states that occur in confused periods.

Use of subshock insulin may be dangerous, especially with alcoholics. Malamud[22] reports 2 fatalities, whose clinical and patho-anatomic features were identical with those observed in fatal complications with ordinary insulin therapy. One was a case of schizophrenia, the other of delirium tremens.

Combined Insulin and Convulsive Shock

A combination of these two therapies has improved results with many patients resistant to treatment. Usually convulsive shock is tried first because of simplicity and economy; then insulin coma if response is poor. Many investigators advocate combining the technics and report salvaging certain cases that would otherwise be lost.

Chapuis and Georgi[23] report an interesting study, certain conclusions of which need confirmation. By combining insulin shock with cardiazol shock they obtained 52.2 per cent remissions (higher than the percentage of spontaneous remissions); over half their cases had no recurrence for 3 to 7 years. They stress energetic treatment, prolonged for at least 3 months in cases of failure with insulin alone; an 8-weeks period separates the two courses.

Weil and Moriarty[24] report improvement in 15 of 20 patients treated with insulin after failure with electroshock, and worthwhile improvements in over half the cases with poor prognosis and long standing psychotic symptoms. More than half the patients had received more electroshocks than insulin comas, yet almost all of the latter group responded better to insulin than to electroshock. Nevertheless, in all cases of schizophrenia electroshock should be tried first. It may be successful and if not it reduces the subsequent courses of insulin needed.

In 21 patients, 6 insulin resistant and 14 unimproved by insulin therapy, better results were obtained with combined insulin and 3 to 10 injections of metrazol, according to Stell.[25] Metrazol seemed the chief cause of remission in 3 cases and in 8 initiated the improvement. Of the 14 cases unimproved by insulin alone, 7 were helped by added metrazol therapy. Stell suggests that metrazol helps initiate improvement in patients resistant to hypoglycemia, and makes possible deeper hypoglycemia with fewer units of insulin. Altogether, 55 patients were treated on the insulin ward in one year; 78 per cent improved and 70 per cent were paroled, with 9 relapses, a final parole rate of 53 per cent, a satisfactory rate considering that half the

patients had had chronic illnesses.

Horwitz and Kalinowsky[26] found combined insulin and electroshock therapy the treatment of choice in certain difficult cases of schizophrenia. They obtained remissions in about 60 of 78 cases of schizophrenia, with best results in cases of not more than 6 months' duration. No remissions occurred in cases of more than 2 years' duration. They found intensive psychotherapy a necessary adjunct.

Conclusions

The final value of insulin therapy in schizophrenia is extremely difficult to evaluate,[27] as these varied results illustrate. In our department we do not use the deep coma shock as much as formerly, perhaps in part because we take fewer cases of severe schizophrenia. Most of our patients have affective components that respond better to electroshock treatment. In general, we prefer insulin treatment to electroshock in schizophrenia of recent onset, without predominant affective reactions. The acute paranoidal type responds best to treatment. In many cases we prefer a combined treatment of 6 to 12 electroshock treatments and 20 insulin comas.

We believe we see sustained results in less than half of such cases, and perhaps only half of these make complete recoveries. The usual gain is a social recovery in a patient who can then be cared for at home in a favorable environment. But he often remains without insight and is always subject to a relapse. Recovery can be sustained in some cases by follow-up treatments. Moreover, one must admit an occasional brilliant result in a case that appears at first to have a grave prognosis.

In the degree of shortened hospitalization and for want of a better therapy, the trial of insulin in early schizophrenia is usually justified. In certain recurrent cases prefrontal lobotomy should be considered finally after shock therapy has been given an adequate trial.

Authors' Note: This is the second of a series of three articles on the subject title.

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Electroencephalography in the Diagnosis of Hearing Loss in the Very Young Child

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Hearing in the young child may become seriously impaired or lost completely as the result of numerous local or systemic diseases and certain poorly understood hereditary or intra-uterine influences. It is of importance to determine the etiology of the hearing impairment in each child, for specific therapy is thereby indicated, but of equal importance is an understanding by the physician of the tremendous social handicap imposed on the child with inadequate hearing.

It is not generally appreciated that, unless properly educated, the child with profound hearing loss can never develop speech. It is apparent to all who give the matter thought that spoken language becomes established in the young child only because he hears the words spoken to him, and hears himself speak, by imitation, that which he has just heard. Very quickly in his physical and mental growth he develops speech memory, tending to imitate less and less, but rather speaking the words he remembers hearing.

His hearing, throughout the process of learning speech, is the basis of his social development, and without hearing he is speechless or "dumb." His problem in social communication, for practical purposes, is personally insurmountable. He cannot hear his parents or playmates or talk to them. Without prolonged specialized training he cannot learn to read or write, although in the majority of instances his intelligence is excellent. In a world of sound he cannot react to a fire siren, an automobile horn or a parent's call. If untutored, he lives not only as a speechless social outcast, but also in danger from things he cannot hear.

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The experience of all who have worked in the field has demonstrated that education of the hearing-handicapped child, to be effective, must be instituted as early as possible, preferably under three years of age. Teachers of the deaf know the techniques of reaching the child through his eyes and sense of touch so that he may be taught to speak and to read the lips and speech gestures of others. He may then assume a productive place in society.

The diagnosis of profound hearing loss in the very young child is a problem of considerable difficulty. The clinical examination is seldom objective and does not lend itself to satisfactory interpretation. As a result it had become widely accepted otological procedure to have the child brought back when older so that the otologist could be more nearly certain of his findings. However, the education of this child, brought back when "six-years-old" would be seriously hampered. By that age he would have developed certain undesirable habits of communication (e.g. use of the hands), and would have superimposed behavior and personality distortions secondary to his hearing loss.

It was thought electroencephalography might be of assistance in establishing an early diagnosis, even in the infant suspected of hearing impairment. As we originally conceived this study, the infant or child, under electroencephalographic conditions in sleep, would be exposed to various calibrated sound stimuli. It was hoped that such stimuli, if perceived, would be expressed as a visible alteration in specific area potentials. Marshall, Woolsey, Bard[1] and others,[2,3] have reported such studies on animals, and they have been used in mapping the cortical projection areas of vision, hearing, and smell. These specific area responses are not considered in the present study, though they will be at a later date. We have concerned ourselves with the non-specific *arousal response*[4,5] to sensory stimulation. We will show

that the *arousal response* (Fig. 1) gives a satisfactory practical index of functional competence in any sensory modality.

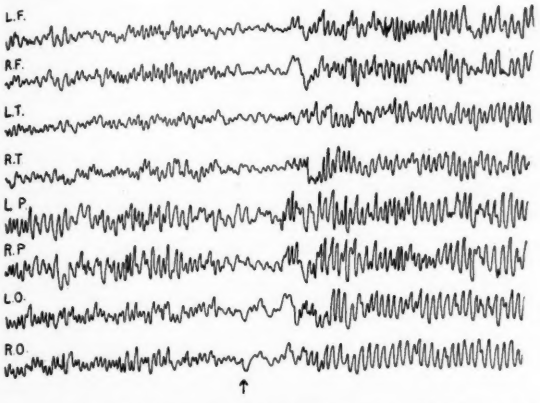

Figure 1: Eight-channel electroencephalograph recorded from eight cortical areas with a reference electrode formed by interconnecting the two ear lobes, showing arousal from sleep as a result of sensory stimulation at the arrow.

To the left of the arrow and for a short distance to the right the wave forms are those which are characteristic of sleep, but the last third of the record shows waking activity. In this instance the stimulus was the whispered name of the patient, but any sensory stimulation, if sufficiently intense or meaningful, will produce the same disappearance of sleep patterns.

All the children in this study had complete otological examination, including labyrinthine function and hearing tests in the clinic. The first few children, while under ordinary or barbiturate-induced sleep, were tested with the clinical audiometric technique used for older children and adults. It was soon observed that the electrical circuit of the audiometer interfered with the electroencephalographic tracing and could not be used. Methods to obviate the interference were tried unsuccessfully. Furthermore, the unilateral earphone of the audiometer was found cumbersome, whereas bilateral earphones tangled the wires and disturbed the child. Standard clinical tuning forks were then employed but it became apparent that the pure tone of the fork, even though loud, did not constitute an adequate stimulus, especially in the child with profound hearing loss.

It was then postulated that the most desirable stimulus would be a frightening noise of powerful intensity, reasoning that, even in the presence of profound hearing loss, there would be a response to a universally frightening sound. An analogy would be the violent recoil of a child on touching a hot surface, whereas no response might occur on contact with a smooth or otherwise innocuous surface.

As the study progressed sounds of a crashing dishpan, a powerful cowbell, a tom-tom, and a police whistle were used unilaterally first on one side and then on the other in a free field and with tactile stimulation scrupulously avoided. It was noted that the *arousal response* was obtained when the sound was perceived and was the same as the response caused by tactile, olfactory or visual stimulation (shining a bright light on the closed lids). Response to olfaction was used as a control by holding a cotton ball

	PATIENT	AGE YEARS	HEARING AROUSAL RESP.	ACETONE AROUSAL RESP.	ELECTROENCEPHALOGRAPH INTERPRETATION	MEDICATION
1	L.P.	2 1/2	0	+	NORMAL	0
2	R.F.	2	0	+	NORMAL	0
3	R.R.	4	0	+/−	RIGHT TEMPORAL SEIZURE DISCHARGES; BORDERLINE SLOW	0
4	J.L.	1 1/2	0	+	MODERATE ABNORMALLY FAST	3/4 G. AM.
5	C.T.	3	0	+	MODERATE ABNORMALLY FAST, MAXIMAL IN LEFT TEMPORAL LOBES	0
6	M.A.	4	R.EAR +	+/−	S_2 FOCUS IN LEFT TEMPORO-OCCIPITAL LOBES	0
7	L.H.	2	0	+	MODERATE ABNORMALLY FAST	0
8	E.F.	2	R.EAR +/−	+	NORMAL	0
9	D.H.	6	+	+	NORMAL	G. SEC.
10	K.S.	1 1/2	0	+	MODERATE ABNORMALLY FAST	0
11	G.P.	3	R.EAR +	+	GENERALIZED SEIZURE ACTIVITY, ASYMMETRY LEFT TEMP-OCCIPITAL AREA; ABNORMALLY FAST	3/4 G. SEC.
12	L.D.	2	0	+	NORMAL	0
13	V.S.	2	0	+/−	NORMAL	0

Figure 2: Group I Cases in whom hearing could not be demonstrated in the clinic.

G. AM., grains amytal.
G. Sec., grains seconal.
O symbol indicates no response.
† symbol indicates EEG arousal response.
‡symbol indicates questionable or sluggish response.

	PATIENT	AGE (YEARS)	HEARING (AROUSAL RESP.)	ACETONE (AROUSAL RESP.)	ELECTRO ENCEPHALOGRAPH INTERPRETATION	MEDICATION
1	T.G.	3	+	+	ABNORMALLY FAST, BOTH TEMPORAL LOBES	3/4 G. SEC.
2	K.B.	5	+	+	MODERATE ABNORMALLY FAST	3/4 G. SEC.
3	B.Mc.	9	0	0	VERY FAST ACTIVITY	1 1/2 G. SEC.
4	J.B.	6 1/2	+	+	INDEPENDENT BILATERAL SEIZURE DISCHARGES	3/4 G. SEC.
5	J.I.	5	0	+	LEFT TEMPORO-OCCIPITAL AREA FOCUS, MOD. ABNORMALLY FAST	0
6	D.L.	4	+	+	GENERALIZED SEIZURE ACTIVITY; MODERATE ABNORMALLY FAST	3/4 G. SEC.

Figure 3: Group II Cases in whom residual hearing could be demonstrated in the clinic prior to electroencephalography, but who had unintelligible speech, or were unable to speak.

soaked with acetone under the nose. Previous and corollary studies have shown that the normal-hearing child responds as acutely to auditory as to olfactory stimuli.

Nineteen patients from the Hearing and Speech Clinic of the Illinois Eye and Ear Infirmary and the University of Illinois were studied. Their ages ranged from 17 months to 9 years. They were divided into two groups. One group (Fig. 2) consisted of 13 children in whom no hearing could be reliably demonstrated by routine otological examination. The second group (Fig. 3) consisted of 6 patients in whom speech was retarded or unintelligible and who were found to have residual hearing in the clinic.

In the first group 9 demonstrated no arousal response to auditory stimuli, one showed a response from each ear, two a response from one ear, and one a questionable response to stimulation of one ear. Three showed a sluggish response to acetone olfaction and the remainder, or 10, a marked response to acetone. The electroencephalogram showed seizure discharges or a slow-wave focus in 3, borderline abnormality in 4, and normal in 6.

In the second group of 6 cases of speech disorders, 2 showed no arousal response to auditory stimuli and one of these two also did not respond to acetone. The remaining 4 responded well to both hearing and olfactory stimulation. The electroencephalographic interpretation in this group revealed 3 to have seizure discharges or a slow-wave focus, 3 borderline abnormality, and none were normal.

Discussion

Hearing is a complex function which can be most profitably studied in terms of its components; reception by the ear, transmission to primary centers, projection to secondary centers and spread to association areas and effectors. Electroencephalography is but one of the techniques which may be brought to bear on the problem of diagnosis and localization of the hearing defect. The approach to this problem in the present instance is entirely pragmatic but it is believed that the practical advantage which results from the use of electroencephalography for the diagnosis of hearing loss in the very young child is sufficient to warrant continuation of this type of study, and it is believed that as experience accumulates the electroencephalograph will take its place with other techniques such as audiometry, the measurement of the psychogalvanic response, tests for sensory aphasia, etc., as a means of studying persons with hearing loss. Cross correlations between results obtained with these techniques will be important, and highly significant information can doubtless be obtained by the study of patients with known types of localized lesion. The results which are presented here are admittedly of a preliminary nature, and they are not intended to indicate that electroencephalography is superior to any other type of test, nor that the arousal reaction is the best criterion for hearing. It is merely one criterion for hearing, but from the experience thus far obtained it is serviceable.

Conclusions

1) Routine electroencephalography in sleep has been found especially advantageous in testing sensory function. The present study has concerned itself particularly with the use of such a method in the early diagnosis of hearing loss in the young child.

2) Electroencephalographic arousal response to appropriate stimuli is an adequate index of hearing or other sensory function and is of value in early diagnosis of hearing loss in the infant and pre-school child.

3) Electroencephalographic evidence of intracranial disorder was found in three; borderline abnormality in four more of thirteen cases in whom the hearing defect was recognized in the otologic clinic but no other disorder suspected.

4) Electroencephalographic evidence of intracranial disorder was found in three; borderline abnormality in the three remaining of six patients in whom the primary disorder was retarded speech and an associated incomplete reduction in hearing function.

5) The relationship of hearing loss or other sensory dysfunction to central nervous system disorder as evidenced in the electroencephalogram should receive further investigation.

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*Grief Reactions and Their Treatment**

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Grief reactions in psychiatric terminology are normally referred to as depressive states. These cases are usually precipitated by the sudden death of someone important and close to the patient. The bereavement considered as normal grief is generally helped by relatives and friends, or by the clergy. Occasionally the general practitioner is called upon to assist in treatment. Infrequently psychiatrists are consulted in the management of such cases, i.e., patients grief-stricken over death of a relative or of victims in a disaster (the Cocoanut Grove fire in Boston).[1]

Lindemann[2] considers acute grief to be a definite syndrome and describes the essential characteristics as (1) somatic distress—periods of sighing, choking, "emptiness," and exhaustion, (2) preoccupation with the image of the deceased, (3) guilt feelings, (4) hostile reactions, and (5) change of behavior pattern-restlessness, pressure of speech, loss of zest, lack of initiative. Avoidance of the grief is commonplace and the patient may refuse visits of relatives and friends or avoid situations that bring up mention of the deceased. The individual attempts to suppress the bereavement of the loved one in many cases because of fear that he might break down or possibly lose his sanity. Treatment entails encouraging the patient to face the issue frankly no matter how painful it might be. Successful resolution of the grief depends on how well the patient is able to free himself from the association to the deceased, effect a readjustment of his environment without the loved one, and establish new personal relationships.[1]

Morbid grief reactions are distinctly pathological in that they may be prolonged or distorted states of depression as for example the profound depression resulting from delayed grief in a 56 year old woman who lost her husband suddenly and shortly afterward made a serious suicide attempt. She had been compounding grief since early life. At the age of 10 she lost her mother through illness; her father was killed two years later; her only brother died in a Japanese prison camp in 1945. This series of griefs was overwhelming.

Clinically the grief picture varies from one of reactive depression with neurotic features to that of severe agitated depression or melancholia. These entities may be encouraged by the unwarranted attitude of relatives and friends who expect the bereaved one to be "brave," and by sociological forces that formerly dictated prolonged periods of mourning.

Protracted grief is more likely to occur in individuals with obsessive - compulsive personality patterns or in persons who have had previous anxiety or depressive reactions. Individuals with great dependency needs are more strongly affected by bereavement. The loss of young children and stillborns may be conducive to pathological grief as in this case history.

Case I: In the spring of 1948, a 29 year old married woman was treated for a grief reaction that followed delivery of a stillborn. Her reaction became acute after her physician told her that he might have saved the baby had he performed a Caesarian section. This situation appeared to light up a series of past griefs that had been unresolved. The patient's father deserted the mother before her birth. The patient left home to work at age 14, was married at 16, and was carrying her second child at age 20. In this setting, her first husband was arrested for rape of

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a minor. The patient returned to her mother with her child, and went back to work after the birth of the second child and divorce from her husband. A year later their home was destroyed by fire and her three year old boy and her mother were burned to death. Her baby was saved. The patient carried on without much emotional reaction to this tragedy and she remarried in 1946. This marriage has been successful; both the patient and her husband have been anxious for children and the recent pregnancy was looked upon with great anticipation.

This patient was seen in consultation because of extreme restlessness, pressure of speech, indecision, morbid preoccupation concerning the stillbirth, and recently developed frigidity. She appeared to be unable to express her emotions adequately and with one sodium pentothal interview she showed marked improvement. She relived with great emotion and in detail the past griefs of her life. She felt enormously relieved at the termination of this treatment, and it was necessary to see her only on a few subsequent occasions. The nervous symptoms disappeared and she is looking forward to the prospect of more children.

The death of a dominating, key member of a household necessitates a profound alteration of the family pattern of living. Previously suppressed hostility on the part of the bereaved toward the deceased leads to a deeper reaction of grief. Abnormal hostility was revealed in a 56 year old married woman who had lost her only son, age 32, following a surgical operation. She was found by the police at her son's grave after taking an overdose of barbiturates. Psychiatric study revealed a cyclothymic individual who had carried intensive resentment toward her husband and son for years. Guilt feelings over her resentment were manifested in a reaction of marked hostility toward doctors, nurses, hospitals—anything connected with the medical or nursing professions. Although she was helped by electroshock therapy, she is no friend of the medical profession.

The method of choice in therapy is dependent upon the individual grief reaction. The psychiatrist attempts to assist the patient to accept his bereavement and resolve the separation in a healthy fashion. The patient must face the painful situation directly and express his sorrow and sense of loss. He must bring out his guilt feelings and resolve them in a natural way. He needs to digest the tragedy and then reestablish himself with different relationships in the future. If the psychiatric reaction is not too profound, office interviews may accomplish the proposed task.

If the individual has difficulty in expressing himself or cannot release his suppressed emotion, interviews with the aid of sodium pentothal may be more effective as was used in the following case.

Case II: This 35 year old male was seen in consultation in June 1948, because of generalized tension and anxiety and bodily symptoms that were thought to be due to a ruptured intervertebral disc. The neurosurgeon had postponed operation because of the patient's generalized restlessness and nervous tension.

The history revealed that two years before this patient's wife died suddenly from eclampsia in the seventh month of her first pregnancy. The patient had the dramatic experience of taking his wife to the hospital from a mountain resort; en route she suffered a series of convulsions and died 48 hours after admission to a hospital. The patient showed little outward emotional reaction to his wife's death; relatives and friends remarked how brave he had been and how well he bore up under the grief. After a few days he returned to his work and arranged for his sister and family to move into his home. His sister, incidentally, was pregnant and delivered a baby within a few months.

The patient gradually became tense and "pent-up inside"; he noted a restlessness that could not be satisfied by his ordinary schedule. He withdrew from many interpersonal contacts and remained at home a good deal of the time. About six months ago he suffered a mild injury to his lower back and developed sciatic-like symptoms of the left lower extremity. Insomnia, irritability and restlessness increased. Examination by an internist and neurosurgeon led to psychiatric consultation.

Mental status revealed a meticulous, compulsive personality with rather marked underlying dependency needs. He was tense, anxious and restless; there was pressure of speech and preoccupation with his physical complaints. The psychiatrist's attempt to discuss the grief situation was met initially with a cold, evasive attitude.

A second psychiatric interview offering the patient an opportunity to aerate his personal history and conflicts was fairly successful, but it was apparent that the patient was unable to release his repressed emotions. Sodium pentothal interviews were decided upon and he was given five sessions over a period of two months. There was immediate reaction to grief with expression of sadness in the first interview. The patient related at great length the details of his wife's death and the circumstances surrounding it. He expressed guilty feelings that he might have done other things to expedite the trip to the hospital, although this was not possible. In the second, third and fourth interviews, he continued the same expression of grief and seemed to cling to

pleasant memories of his wife and the unpleasant thoughts of losing her. The patient was not making satisfactory progress and apparently was using the sodium pentothal interviews more or less to recapture his wife's presence. This fact was brought out to the patient and he seemed to understand that instead of giving up his wife, he was holding tenaciously to her during treatment. He showed considerable improvement during the fifth interview, definitely reconciling himself to his wife's death and to the fact that he must reconstruct his own life. Subsequent office calls have shown that the patient has recovered from the grief, and his psychosomatic symptoms have disappeared; he reestablished his social-recreational life, and he is looking forward to remarriage in the future.

This case illustrates a protracted grief reaction in which the outward symptoms became those of restlessness, tension, and psychosomatic complaints. The patient had been unable to express his grief, but through sodium pentothal interviews he met the loss of his wife more directly and totally, and made a good readjustment.

Sodium pentothal interviews are generally carried out in the office with the assistance of a nurse. The patient is encouraged to relax on a reclining couch. Sodium pentothal, in 5 per cent solution, is injected intravenously. Injection is made slowly at the rate of about 1 cc. per minute, and usually 5 to 7½ grains (6½ to 10 cc. of 5 per cent solution) are required to produce a state of drowsiness and semiconsciousness, at which level the physician interviews the patient. As a precaution against complication, the injection is given slowly and is regulated by the patient's general physical state, i.e., pulse, respiration, color, and degree of awareness. In one technique, the patient is asked to count backward slowly from 100 during the injection. When the speech becomes thickened or the patient makes errors in counting, the desired state of drowsiness has been reached. A tank of carbon-dioxide-oxygen mixture is available in case of idiosyncrasy to the medication. Ampules of coramine and caffeine are at hand if needed.

As a rule, the interview takes about an hour, and the patient is encouraged to rest for an additional two hours before leaving the office. One should advise the patient not to drive a vehicle or attempt to return to work on the day treatment is given.

If the suicidal risk is strong, electroshock therapy is indicated.[3] The risk is great when the patient is too closely identified with the deceased, when the task of reconstruction appears to be overwhelming, or when there is a history of previous suicide in the family.

Case III: A 43 year old widow was referred for consultation in October 1947, because of nervous tension symptoms that were thought to be due to menopause, although the patient had not had a change in her menstrual cycle. She revealed herself to be an over-conscientious school teacher who had been in good health until two months previously. Her husband became a cardiac invalid shortly after their marriage 18 years before. They had no children but adopted a son some 10 years ago; this child was afflicted with rheumatic fever at the age of three, and he, too, was a cardiac invalid from then on. Throughout her marriage, the patient repressed her insecurities, and carried an increasing emotional load because of anxiety over the illnesses of husband and son. Two years ago the patient returned to school teaching to aid the family finances. Seven months prior to this consultation, her husband died of a sudden heart attack. She showed no outward emotion at the time in order to protect her son. Three months later her son died of heart disease and the patient was not at the hospital at the time of his death. She was unable to show grief at the funeral and, according to her friends, met the situation in an admirable fashion. She continued with her school work and busied herself with many extracurricular activities. Friends and family continued to remark about how well she was holding up and in this setting the patient developed insomnia, restlessness, push of activity, and feelings that she could not relax.

Mental status revealed the patient to be alert and cooperative, but she manifested pressure of speech, restlessness, and insomnia. She showed compulsive traits, and was extremely anxious to "feel well again." She had had some temporary relief from a few estrogen shots but was apprehensive about menopause.

Past history revealed that the patient's father died when she was six months old and her mother died when the patient was nine. She was raised by an aunt and uncle who treated her as their own child and over-protected her. She stated that she was known to be indecisive as a child and adolescent and had always had great dependency needs until the time of her marriage when her responsibilities suddenly became great.

Sodium pentothal interviews were decided upon as a means of bringing forth the protracted grief reactions of the previous year. The patient had been unable to cry and apparently was repressing the unsolved griefs unsuccessfully. After two pentothal interviews the restlessness disappeared and the patient was able to weep over memories of her deceased husband and son. She became aware that she had not resolved her griefs, and now she was faced with the task of rehabilitation. In the subsequent two sodium pentothal interviews she talked at greater length of plans for

the future, of obtaining work with adults, and possible remarriage. Thanksgiving and Christmas were particularly difficult, but the patient met these holidays with greater ease than she had anticipated.

After the holidays she had a serious reversal characterized by insomnia, loneliness, hopelessness, lack of initiative, poor concentration, and despondency. Formerly her strong religious beliefs had loomed important in her discussions, but these apparently failed her, and she stated that she did not care if she lived or died. Because of the acute suicidal risk, the patient was hospitalized for a course of six electroshocks and responded quickly from the depressed state. She moved to the home of a cousin in another town where she felt she was needed, embarked upon a business career which gave her an opportunity for contacts with new people, and has maintained her recovery to date.

The most distorted type of grief is the agitated depression, characterized by ideas and delusions of self-condemnation and unworthiness, insomnia, anorexia, loss of weight, agitation, and suicidal preoccupations. Electroshock is essential in the management of these cases. However, it should be borne in mind that electroshock is an adjunctive treatment and only the means of relieving the depression and rendering the patient more amenable to psychotherapy. The psychiatrist lends the patient support in working through the grief and in developing a healthier attitude toward the future. The goal of treatment is resolution of the patient's conflicts in relation to his bereavement.

Case IV: This 62 year old widow was hospitalized in August 1946, for the treatment of an agitated depression with paranoid features. In 1943, while her four grown sons were in the Army, her husband, a rigid dominating person, suffered a stroke and was an invalid until his death in 1945. At the time the patient seemed to take the shock of her husband's loss well.

Her sons returned from the war early in 1946; shortly thereafter the two older boys became engaged, one son took a job in another town, and the fourth went away to college. In June of that year the patient became emotionally upset at a bridge party when she felt that she was being unfairly criticised. She began to worry about little things, became hypochondriacal, overactive, and depressed. She neglected her personal appearance and became increasingly morose and self-condemnatory.

The past history revealed a nervous breakdown just prior to her marriage some 35 years ago, and a spell of depression following an illness of her husband and one son in 1920.

On admission to the hospital the patient was in a confused, agitated state with delusions of self-condemnation. Her mood was one of deep depression with apprehension, fear and suspicion. A course of 18 electroshock treatments was instituted over a period of three months. Improvement was slow but sustained and after four months hospitalization the patient returned home where she reestablished herself. She was able to accept the marriage of her two older sons. Her adjustment in the succeeding six months was punctuated by alternating irritability and elation, but gradually she settled down and seemed to accept her new role in life without her husband and family. She engaged herself in numerous social and civic activities and renewed her relationships with former friends.

This case occurred in a setting of protracted grief over the death of a dominating husband, and separation of the family group through school, work and marriage. The patient had had two nervous breakdowns in early life, and was apparently unable to take the impact of events without this serious depression.

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*Studies of Depression, Repression and Inhibition**

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Variations in mood have been attributed to numerous causes—the moon, the planets, the weather and perhaps most of all the state of the digestive apparatus. Undoubtedly mild elations and depressions are commonplace phenomena. Also it is true that mood swings severe enough to interfere with normal behavior are very frequent, occurring alone or as part of the personality responses to many diseases and as part of many abnormal personality reactions. In fact, mood swings severe enough to be called illnesses are probably the most frequent affliction of man.

Freud in 1917, Abraham in 1911 and 1916, Rado in 1927, Muncie, Rennie and Cameron have contributed much to our present day concepts of the disorder as it is seen in the hospital, in the office of the practicing psychiatrist, or in the home. The interpretations given in this paper are derived in the main from the writings of these authors.

The most striking event in the medical history of the last quarter of the century, however, has been the response of the person with depression to convulsive therapy. The discovery of the fact that a generalized convulsion, however produced, will free a person of depression has saved thousands from months of suffering. This discovery certainly ranks with that of the sulfa drugs and the antibiotics in the alleviation of human misery. The results in shock therapy are now so commonplace that one scarcely considers them as an epoch making contribution. Nevertheless, the occurrence of depressions and manias is so widespread and they have such a tendency once they have occurred to be repeated, it hardly behooves the psychiatrist to rest until he understands the underlying cause of the depression or the mania as well as how to remove it. A better understanding of the effects of convulsions might throw some light in this direction.

Norman Cameron writes on page 523 of his book, *The Psychology of Behavior Disorders:* "Mania and depressions we have seen are essentially anxiety disorders, which have been complicated by cumulative and self perpetuating delusional developments, and in the case of mania also by compensatory reactions." He divides the group into the agitated depression, the retarded depression and the manic excitement. He feels manic depressive cycles are rare and that involutional melancholia is like any other agitated depression. The so-called neurotic and reactive types of depression he would not distinguish from other forms except by degree.[1] In Rennie's series the prodromal tension and anxiety symptoms were found to exist for from one to six months before they were recognized as signs of illness. In these cases 80 per cent showed definite disturbing life situations immediately preceding the onset and the relationship of special stress to disease was most obvious in recurrent depressions. The evidence of the pre-existing anxiety may not be obvious, but can always be found in attacks of depression or mania, while the precipitating shock, usually the loss of a love object, may be hidden but is usually even more obvious.[2]

Three illustrative cases are here related. They represent three forms of the manic-depressive reaction. Each was treated by electro shock and amytal narcosis, and in each case the ventilation under amytal demonstrated clearly the suppressed causes for anxiety. The shock removed anxiety to permit the patient to proceed in the usual fashion. The first is a case with apparent sudden onset which was found under amytal catharsis to have been suffering from severe anxiousness for a long time; the second, a case of acute mania that shifted suddenly to depression under electro shock and then was found to have had a long history of worry, and the third, a case of recurrent depression with constant anxiousness who is thrown into depression by ambivalence, guilt feelings and loss of self esteem.

Case No. 228,186: A girl of 22 years was admitted to the University Hospital on March 28, 1948 suffering from arthritis. She gave

*From University of Virginia Hospital.

the history of a spell when she had fallen to the floor unconscious. In fact, she stated she was not conscious until one-half hour after she reached the hospital in her home town. She had never had a similar spell but had often fainted. At this first interview the patient seemed slightly depressed, but over the next three days there was a marked change. She said she had lost all interest in life, she did not want to see anyone, she could not eat or sleep. She sat in her room all day, quiet, but in good contact, apparently without hope. She stated she was thinking of suicide. While under the influence of intravenous amytal on April 11, she gave the following story:

She is the fifth child and the only girl among eight boys. She feels that her brothers have never been interested in her. Her oldest brother whipped her severely when she was very small for not helping her mother, so she has disliked him since and did not associate with this brother. She did not compete with the brothers. There is no emotional tie between her and her parents. Her father, a farmer, has always been attentive to the boys but has shown little affection to her. She believes that her mother tries to understand but is not sympathetic. The mother did not encourage her to make friends and the patient never felt free to bring her friends home, which caused her to become very resentful. She alone in the family completed college, and she concludes that she is the only one in the family who likes the better things in life. She always made group friendships rather than individual friendships because she felt she could not return social obligations. Although her mother discouraged boy friends, she became engaged three years before to a University student and they planned to be married in June of 1946. However, she developed arthritis and the marriage was postponed. They began to have sexual relations, she became pregnant and had a miscarriage in November, 1946. No one knew about this but her mother and fiance, but the patient felt the entire family knew and might kill the boy. She resents the fact that her mother did not tell her that the incident had been kept a secret. Later the mother accused her of promiscuity and was very stern. The patient made a secret visit to Michigan in February, 1948 to visit the boy, returned exhausted and collapsed at work the next day and has been very depressed since. She feels that she can never marry anyone else because of her guilt, but at present the boy has rejected her and is going with another girl so her dream of love is over.

This girl has certainly suffered from loss of love all her life. She had many hostilities. Her engagement and subsequent sexual experiences certainly produced anxiety and ambivalence, while the loss of her lover precipitated her depression. It is interesting that her anxiety existing previous to the depression was discovered by means of amytal. The catharsis gave relief but only for 24 hours and then the depression was even more severe. She was given five electro shocks, became slightly elated, insisted she was well. She left the hospital last March and has considered herself well since.

Case No. 251,689: On March 21, 1948 a 57 year old white farmer was brought into the Emergency Room accompanied by four men whom he stated were to be the pall bearers at his funeral. He was apparently very alert and responded to every movement in the neighborhood. He talked loudly, sang and rhymed. He would insist upon shaking hands and then would hold on with a vise-like grip. He was restrained by sedation and as soon as he could be examined was given four electro shocks. After the fourth treatment his attitude changed completely. He became practically mute. He could not be persuaded to eat and seemed in a stupor; he ceased trying to control his bowels and bladder. This condition continued three days. Then he began to brighten, dressed more neatly and walked alertly about the ward. He stated he was well and wanted to go home, insisting that he had control of the situation. He smiled quietly, was courteous, but insisted that he was well. When he came in, he appeared to show acute mania. He certainly went into a depressive stupor after electro shock.

A synopsis of his history is as follows: He had had weakness of the legs for two weeks. His mother, a very religious person had attempted to force her religion on her son. The eldest of nine children, he was always very conscientious and meticulous. The patient is married and has two daughters, one

of whom has two moronic children. The older girl was attacked by a cousin three years previous and the patient has been very worried since. Five weeks before admission he developed prostatitis which was treated with penicillin. For six weeks before admission his mother visited him. At the onset of his present illness, he began to worry about his religion and that of his family. He recalled early childhood experiences of having to kneel down and pray. He forced his elder daughter to kiss the Bible and swear that she was not at fault in the experience with her cousin. He became quite agitated and thought he was going to die. He was given five electro shocks, was apparently well, and returned to his farm on April 16, 1948.

On May 1, two weeks later, he returned. He had been well one week, then became confused, depressed and agitated. He kept talking about "three things together; there are three chairs side by side." There seemed to be no interpretation of this symbolism. He was given six more electro shocks with some improvement. On May 13, 1948 he was given 0.5 gram of sodium amytal. He said, "Three is the third child. If the third child would do his part, it would not take long to finish the job." He explained later in the interview that his father had divided the farm into three parts. He and his brother, Bernard, had conscientiously worked their sections but Willard, the third brother, had squandered his. He brought out his guilt over his hostility to Willard and his grief over the fact that his father would be grieved by Willard's behavior. The ventilation of this hostility to Willard was continued, four more electro shocks were given, and on May 30 he was discharged and has remained well up until the present. Here again the ventilation with amytal during electro shock seemed to release the underlying conflict which prevented the patient's recovery.

Case No. 160,670: This patient, a 70 year old minister entered the hospital on November 6, 1948 and was discharged on November 29. He had previously been hospitalized on March 31, when he was admitted with symptoms of depression, loss of interest, loss of self confidence, worry over finances and his imagined inadequacies, difficulty in sleeping and feelings of hopelessness. This condition had started about two months earlier and seemed to be precipitated by the filing of his income tax about which he felt there was some irregularity. He became unduly anxious about this and then began to feel that everything he did was wrong. His past history revealed that the patient's mother died 16 years before of heart disease. She had been an extremely nervous, apprehensive and worrying type of woman all her life. Since childhood the patient has had severe conflicts over sexual matters and masturbation. This abnormal concern and guilt feelings have continued up to the present time. He has been very introspective, reading a great deal about psychology and attempting to analyze himself. He feels that he has not been a real success in his work and has lacked the aggressiveness that he desired. His first depression was in August, 1932 and his first admission here was in 1940. He came in again for treatment in 1946, 1947 and then March, 1948. His depression in 1940 seemed to be precipitated by the fear that he had heart disease and worry over financing his son's medical training. The episode in 1946 followed an operation. The one in 1947 followed his income tax declaration and guilt feelings that he had not declared everything. He was treated with electro shock during the last three admissions and made satisfactory recovery but continued to carry the underlying feelings of guilt.

The precipitating causes in this man's career are fairly obvious. He has to make a decision, becomes ambivalent, then guilty and then depressed. Attempts have been made many times to relieve him by ventilation or by amytal catharsis, but nothing brings satisfactory relief except electro shock. He then remains well until a similar situation recurs. It is interesting that after his shock therapy while he was slightly elated and insisting that he was well enough to leave, he was given 0.5 gram of sodium amytal intravenously. At that time he disclosed that his guilt feelings, his worries and his feelings of unworthiness were all present, but glossed over by his superficial feelings of well being.

The analytic interpretation of the development of depression is based on the contribution of many writers; as pictured by Fenichel[3] it is approximately as follows: there is an over-emphasis on the oral stage which makes the potential depressive patient require an

abundance of admiration and love. This orality makes the subject especially prone to injury from loss of love and is evidenced by the loss of interest in food during the depression. Next there is usually a dominant or rejecting parent who causes the period of anal eroticism to leave its mark so that the individual is perfectionistic and especially prone to compulsiveness and hostility. The hostilities and the need for love also produce a tendency toward the development of ambivalence. Thus the patient will frequently suffer from periods of indecision which pass on to states of worry and anxiety over trivialities. The image of the stern parent is incorporated into the super-ego which then exists as a threat to the ego because of its strength and its severity.

Now the stage is all set for the reaction. There is a love object which gives this potential depressive narcissistic supplies. With the love there is the opposite feeling of hostility. The person is most often in a state of anxiety at the time, perhaps over the anticipation of the loss of this love object or over some other source of indecision and ambivalence. Then the love object is lost, there is a loss of narcissistic supply, the object becomes incorporated into the super-ego or perhaps in part into the ego carrying the hostility which was formerly attached. The super-ego now assaults the ego. Guilt feelings develop. There is loss of self esteem which in turn produces more feelings of guilt. The ego succumbs and depression develops. Mania occurs as an opposite reaction to the same sequence of events or as an escape from depression. Thus we have an ego supine and submissive to the sadism of the super-ego; namely, the simple retardation, or one that fights back as in the agitated depression or finally an ego that engulfs or swallows as it were the super-ego and so reigns uninhibited and omnipotent freely gratifying its narcissistic needs. This conflict goes on until the punishment suits the crime, the guilt is expiated, the sadism satisfied, and the ego can once again meet the world in an adjusted manner. The disease thus ends spontaneously.

Into this picture has been thrust the fact of recovery from convulsive therapy. This result is explained by Eric P. Mosse[4] as follows: "We might then conclude that this phenomenon is the result of a kind of destruction or at least an easing up process of the forbidding super-ego. This seems to be accomplished by the experience of the shock as an utter punishment leading the patient to the verge of death. Such an experience is conceived as an act of atonement. The most impressive psychological effect of the shock treatment—the strengthening of the ego, its detachment from above mentioned pathological regressions. The often dramatic improvement has to be looked upon as due to a similar change in a child that felt guilty and can again be a 'good child' after having received the much needed punishment from a parent (psychiatrist) in whose basic kindness the patient can confide." The convulsion works both in mania and depression since each is a reaction to guilt feelings, so adequate punishment brings relief of guilt thus ending the need for either form of defense.

D. Ewen Cameron[5] finds "that manic excitement, depression and anxiety states are related in terms of the degree of facilitation and inhibition which is present. In all three the total tensional level is raised but in the excitements facilitation is maximal and inhibition is greatly reduced though still present. In the depression inhibition is present with facilitation greatly reduced. In the anxiety states there is an increase in both facilitation and inhibition, the two, as it were, competing against each other and being responsible for the characteristic picture of curbed over-activity." By inhibition he means "limitation in the amount and range and slowing down of behavior which exists despite otherwise general capacity for activity as well as the individual experiences of this" and by facilitation he means "the increased tendency to activity due to increased ease of performance in an individual whose capacity for activity is otherwise normal as well as his experience of this." Dr. Cameron concludes that these elements are always in balance during the reaction so the clinical picture results from whether facilitation or inhibition is present in greater degree; also depression, anxiety and excitement may be found in the same person at most any time.

Gantt and Maier have studied the effect of punishment on frustrated animals.[6] Maier states that behavior based on frustration cannot be modified as can goal motivated behavior. Punishment of fixated response may

reinforce it. The animal chooses the response which leads to the greatest satisfaction. Too much punishment might lead to generalized inhibition and too much reward to generalized excitation, even when punishment has no frustrating effects.

Thus we see the analyst believes electro shock cures because it is punishment. Dr. Cameron believes depression is characterized by too much inhibition, but those who study conditioned reflex in rats and men say punishment increases inhibition. How then does convulsive therapy cure?

Narcosis with sodium amytal has been used since 1930 for therapeutic reasons, for diagnosis and for prognosis. The drug releases the personality, as it were, so that it is often called truth serum. Doubtful cases of schizophrenia produce revealing hallucinations under its influence, while after insulin shock much aid is given to deeper analysis by its application.[7] It is used in psychotherapy of all kinds because of this property. Melvin Myerson, *et al*, found changes in the knee jerks and ankle clonus. Thorner[8] found transient Babinski response in nine cases stating that "one may construct a time table using the concentration of sodium amytal in the body as an independent variable. With lower concentrations chiefly psychological changes are apparent. As concentration increases neurological signs which are suggestive of some action on the cortical pyramidal and associated systems appear. The order of events is in consonance with the order of phylogenetic development of the functions involved. From our previous experience with sodium amytal we have come to the belief that its chief action is an inhibitory effect. In catatonic and super-inhibited states the drug would act to inhibit the over-inhibitive process present and thus grossly appear as an anti-inhibitory." The "release phenomena" observed may be explained by inhibition of higher inhibitory centers.

During the last six months at the University of Virginia sodium amytal has been used after electro shock in an effort to determine its prognostic value. It was found early in the investigation that patients apparently well with no consciousness of any conflict, under amytal would disclose a great deal of repressed material. Often this disclosure would be sufficient to return the patient to a depressed state. Sufficient time has not elapsed, nor a sufficient number of cases studied, to allow a comprehensive report on the study from a prognostic point of view. The results are so variable that unless there is a large series, they have no value. This, however, has been shown—that patients who showed "release phenomenon" before convulsive therapy would do the same afterwards, and the material obtained after shock was that released previous to shock. Also if electro shocks were alternated with the amytal interviews, affective reaction to the material disclosed on interview was lessened. There was less tendency for elation and probably there will be less tendency to relapse. Clark, Kiefer and Gerson[9] asserted that a "good response" to amytal previous to shock had a favorable prognostic value. Our studies do not justify such a conclusion for amytal given after shock. However, we do feel the results do throw some light on the nature of the depressive reaction and on the effects of the electro shock.

Case No. 160,670 given above illustrates the usual sequence of events. This 76 year old minister entered the University Hospital on November 6, 1948. His depression began about October 1, 1948. He has been unable to make up his mind to resign from his pastorate and had been worrying over it since early September. In October he definitely decided to resign and at that time became depressed. This man was first seen in 1932 because of a depression. He has been having recurrent depressions more and more frequently. Each time he repeats the pattern of anxiety, ambivalence, loss of self esteem and then depression. Each attack responded to five or six electro shocks, and the patient resumed his work apparently cured, but the return of depression has now become a matter of months instead of years. On September 7, 1946 he was given 7½ grains sodium amytal intravenously in the usual slow manner. He talked readily of sex matters with which he seemed to be pre-occupied. He spoke of his guilt feeling in respect to childhood and adolescent sex behavior. He ended the interview by a discussion of his wife's frigidity and his pollutions.

At the time of this admission in November, 1948 he was concerned obviously over the loss of his parish and his feelings of failure as a

minister. He was anxious, restless and severely depressed. He stated he was hopeless and useless. On direct questioning by the doctor he admitted his concern over the sexual matters he had revealed only after amytal in 1946. Now these matters were causing great worry. He was given three generalized convulsions by means of electro shock. He was slightly confused, had no memory of the conditions of admission. He said he wanted to go home to get to work. He was well and there was no reason for his being in the hospital. At this time, November 16, 1948, 0.3 gram of sodium amytal with 10 mgm. of desoxyn were given intravenously. Under the influence of the drug he expressed no concern over his retiring from the ministry, but began to discuss those childhood sex infractions and his wife's frigidity, which were still objects of concern. Thus it is seen that two amytal interviews given two years apart under similar conditions revealed similar preoccupations. The last interview was given after shock when the patient felt well, was not visibly concerned, and if anything slightly elated. He was somewhat upset by this interview. He was given two more electro shocks. On November 29, on direct questioning, he was not disturbed about anything except how he could get out of the hospital and who was going to pay the bill. He stated that he had no sex worries. Again he was given amytal. He again detailed his sexual misconduct, but this time with less affect. He was not disturbed by his catharsis so was discharged apparently in excellent shape.

Other cases have evidenced the same behavior. The fundamental pre-occupation is there; it represents an indwelling habit of thought which has been repressed from consciousness. It comes to the surface at times of illness and disappears into the depths after convulsive shock. The electro shock causes a repression of the disturbing material. The ability to repress which has been lost now re-appears. The repressed material ceases to plague the individual so he is able to arise and go about his business. The material is still there, however, as can be demonstrated by the "release phenomenon" of amytal.

From this study we can conclude that:

1) Depression arises from the loss of ability to repress from the realm of the consciousness disturbing habits of thinking.

2) Electro shock enables this material to be repressed.

3) This repression is very similar to inhibition, not that of Cameron, but similar to inhibition of reflexes, a property considered by physiologists to belong to cortical cells.

4) Small doses of sodium amytal given slowly intravenously restrain this inhibition revealing the underlying material. They also do away with cortical inhibition as shown by the release of reflexes.

5) Depression then occurs when there is an invasion of the consciousness (or cortex) by material previously repressed or inhibited. Electro shock restores this state of repression or inhibition. Sodium amytal in turn removes this repression or inhibition.

6) If sodium amytal and electro shock are alternated, the affect is removed from the repressed material so that the effect of the electro shock may be more lasting.

7) A serious objection to the use of electro shock in treatment of personality disorders has been that it puts an end to all possibilities of psychotherapy. By this method effective psychotherapy can be used during and after electro shock.

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*Neurotic Patterns of Competition**

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The presence and influence of competitive trends in nervous disorder must not be overlooked, for our patients are born into, and develop in a social texture where competition is invariably found. In our social and occupational patterns, our patterns of health, happiness, and welfare, and even our patterns of disease, distress, and deprivation, though often subtle, runs the thread of competition. No longer do some persons find satisfaction in the single goals of power, money, or prestige, rather in our highly-geared society are they driven by chain goals: one achievement serving only as a stimulus to the next. Moreover, in a culture where masculine and feminine prerogatives are confused, the vindication of gender and capacity often takes precedence over achievement, and the individual becomes entangled in the meshes of neurotic competition.

Nowadays, everybody wants to be somebody. Since of necessity, self-assertion is dependent on the voluntary or enforced cooperation of others, certain patterns of competitive cooperation have perforce crystallized. They may be considered neurotic to the extent that competition becomes an end in itself, and achievement and productivity, incidental, secondary, and transient.

Although uneasily aware of being a cog in the social machinery and contributing momentum to forces that may well get out of hand, the anxious man of today little suspects that the neurotic pattern of life exacted by society centers in his own home, shaped in part by the competitive trends in his own nature. Operating to an excessive degree, or beyond the time when they are a needed stimulus to development, competitive patterns perpetuated into maturity, contribute toward what has been called by Alexander, "a society organized on the adolescent level of competition."[1]

To trace this pattern, we do not have to look far. Like charity, it begins at home, where authority is frequently divided, and discipline stupidly and unevenly administered. Neurotic parents, unsure of their own status, compete with one another, with their own children, and with their neighbors, for position, possessions, power, and prestige. In turn, their children vie with one another and with their parents as well, in terms of their own desires, imitating adult techniques. In school, the child extends his scope of rivalry, and subjected to further competitive conditioning, carries into adulthood competitive attitudes in work and play and all the business of living. The excitement of contesting in all interpersonal relationships, even the most intimate, frequently spurs the individual beyond his capacities, and contributes to nervous disorder. Meanwhile, in response to subtle advertising, his demands increase; with more and more things to compete for, his dissatisfactions multiply while his frustrations grow. Even in reaching out for his share of the market, he, himself, as consumer, is an object of competition, and as such, is flattered, catered to, and fought over. Nor do the poor and ill deny themselves the pleasure of competing with each other for charity, attention, prestige in poverty and disability, and precedence on the welfare agency roster. Criminals, too, are part of the picture; as individuals or gangs they compete for loot, power, and a place on the front-page; bad boys throughout life, wresting, by bad behavior, the attention they could not win for good.

How does all this come about? Early in life the average child is brought inevitably into one or two situations where he must contend with a rival or rivals in his home environment. In the first, his parents are the protagonists, and in the second, his siblings. In rivalry for love, competition enters as a healthy stimulus, insofar as it undoubtedly contributes to the development of the capacities and talents of the growing individual. The child feels he must "do" something to keep pace with, outdistance, or "destroy" his rival to win the approval and

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preference of the loved one. In the so-called oedipal situation, where the child is rival of the parent of the same sex, or the opposite sex in some instances, he is forced to compare himself unfavorably in point of size, strength, power, or sex with the rival. In this situation he feels hostile, but must conceal it. Only in phantasy can he injure his competitor; but even so he feels guilty, and likewise conceals this, lest the rival suspect his hidden attitudes and retaliate in earnest for the phantasied injury. In competition, however, the child finds a way out. Here he has a method of dealing with his problem in a manner that within certain bounds, and seemingly by common consent, passes as legitimate and friendly. Later on, although his hostile wishes toward his rival may be repressed, he continues to compete, but gradually carries his competition over into other spheres. We note, however, that in certain instances, the child, unmoved by rivalry to any great extent, engages in a different type of competition that derives more directly from a fund of surplus energy available for play and learning, rather than from a strong need to compete. We see this in the child who resolves his conflict successfully and identifies with his rival, so that competition tends to be modified by a willingness and desire to cooperate and compete in a friendly way, taking on a playful aspect, and serving as a stimulus for healthy growth. The young boy playing football with his dad, both enjoying their playful contest, would typify friendly competition with rivalry at a minimum. Thus we distinguish two types of competition, and note that in proportion as the child's activities are given to play and the spending of surplus energy, do we find non-neurotic competition. However, when the primary aim of superseding or destroying the rival, with consequent hostility and anxiety from this source prevails, it is neurotic. Then rivalry is paramount, and the competition takes an edge with consequent hostility and guilt feelings in proportion.

In the case of sibling rivalry, competition may be savage, because the new rival is often doubly hated, for the child must share not one, but two loved parents. Moreover, being younger and weaker, the rival is in the more vulnerable position. Now the child can compete with impunity, up to the point where the parents intervene, or the victim begins to retaliate. Where there is frustration, hostility mounts, and when of necessity repressed, anxiety increases, so the child longs to escape from an unequal contest and return to the state where he was the sole recipient of love and attention for which he need not compete to any great degree. However, at this juncture, the growing child feels some shame in being dependent, wishes to compensate for his weakness, takes heart, once more compares himself with others, and is moved to try his strength again by competing. In proportion to his success, or proven weakness and frustration, hostility flares up, and the pattern described may repeat itself throughout life without conscious realization. Sibling competition, too, when the rivalry is well handled, can be of the friendly, playful type, and this pattern be carried on into maturity and contribute to creative activity. The mature individual competes in this manner and has no need to constantly prove himself and compare himself with others, nor let himself be sucked into the vortex of over-competitive patterns in business and recreation.

There are many nuances and variations in competition in the family circle that may be considered; the ordinal place of the child in the family; siblings uniting with each other or taking sides with a parent against the hated sibling; deprivation of one or both parents, etc.; and how the problem is variously dealt with by those in authority as well as by the child himself. Injudicious handling of the two basic rivalries may establish neurotic patterns of competition on either an oedipal or sibling level or both, and will influence, accordingly, the course of life for the individual in all his relationships to others.

The reasons for mishandling of this problem on the part of the parents can often be attributed to a similar mishandling of the problem in their own lives, with the result that their own conflict precipitates and complicates the same situation for their children, and in some instances, even their grandchildren.[2] Such problems in rivalry, whether solved or unsolved, will often influence the choice of a profession, (pediatrics or school-teaching, for example), and adjustments in interpersonal relationships, and may determine whether the pattern of competition

will be normal or frankly neurotic. Where this problem is unsolved, the individual gravitates in many instances, toward patterns in business and social life that enable him to perpetuate and act out his unsolved conflicts, with or without defenses against them, while continuing to repeat the vicious circle, operative not only within himself, but impinging on similar circles in others and in society itself to contribute momentum to the neurotic patterns of competition we see today.

Illustrative Cases

Case 1: An attractive woman with two years normal school, formerly a school teacher, came from a background where the father was an alcoholic and the mother a paranoid reformer. Early in life she left a broken home to be shifted from one home to another, from time to time sharing life temporarily with an older sister who very early married and attained a secure social and financial position. The patient married a passive business man, and together they rose from a rather insignificant to a superior social level. Gradually, she became an able, but overenthusiastic club woman, engaging in an increasing number of projects to the point where her responsibilities made serious inroads on her sleep and general health. Shortly after therapy, she recognized intense compensatory strivings, where she competed with other women in her various activities, driven to prove she not only was somebody, but in an effort to overshadow her friends with more education and bring them under her domination. Her determination to demonstrate ability, strength, and success, was an effort to establish herself in society as a competent, respected person; but the competition was always geared to the resolve to be more successful than her older sister in order to be admired by older women. Their admiration neutralized the shame feelings and dependency needs arising from her early life.

Case 2: A 19 year old son of a prominent business woman and a weak, unsuccessful father, vied with them and an older brother. When very young he had repeated attacks of osteomyelitis, and by the age of 16 had had twenty-one operations. In spite of this, he showed from the start a tendency to excel in school and competed for honors and popularity, with the result that he became captain of the athletic team and president of the debating society, as well as one of the most popular members of his class. However, he had periodic outbreaks of rage against his father and male teachers, quit school, repeatedly ran away from home, and intermittently attempted to hold down jobs. A particularly savage outburst of fury against his father finally brought him into therapy. Subsequently, he developed a healthy and successful relationship with a rancher who offered him a job on his cattle ranch in the Northwest. Here he continued to strive for success in outdoor activities and rejected a sedentary life and profession. He thus demonstrated competitive trends resulting from a triple rivalry, first toward a father less successful in business than the mother, and a brother who excelled his father in the insurance business, as well as his preeminently successful mother who owned several florist shops. At the same time, he was also compensating for the serious limitations imposed by a crippling disorder necessitating hospitalization, and long periods of dependency, by his determined drive for success, at least on a physical basis.

Case 3: A 30 year old business woman, single, oldest of four siblings, shared in her father's business operations, but was continually frustrated by his policies. Recently, when he contemplated taking a young nephew into the business, she saw in him another rival. From early in life her home was unharmonious because of marital discord. She attempted to resolve this by repeatedly defending her father, but in so doing, developed strong guilt feelings toward her mother. Finally, the situation culminated in divorce, and her flirtatious mother left home. After this, the guilt feelings set off a penance mechanism whereby she spent considerable sums of money on homosexual partners, but in the course of therapy, shifted back to the original object of her love, hate, and guilt feelings—her mother—and of being financially helpful to her. However, this was combined with a growing competitiveness toward her fathr and toward older women, in imitation of her grandmother, (a dominating, intimidating, aggressive matriarch who had ruled the family for the greater part of her life), in an effort to obtain power and bring under her influence any who threatened her own independence. It is evident that in eventually gaining control of the business, she solved her own dependent needs as well as her mother's, and sidestepped identifying with her mother's promiscuous tendencies by attempting instead to identify in sex with her father, even while competing with him.

Case 4: A man aged 28 was rejected by the Army for gastric complaints simulating peptic ulcer, and complained also of violent headaches. Shortly after this, he demonstrated terrific attacks of rage against his wife and son, and would actually vie with the latter for his wife's affection. Although he was quite successful in business, as his success mounted, his hostility towards his wife and child increased, and his headaches became progressively more severe. His gastric symptoms ran parallel with the hostility towards his son, whom he often beat rather cruelly, and insisted on bathing, only to put soap into his eyes deliberately. He was a hard-driving, demanding, determined-to-be-successful, competing person. Throughout his lifetime, he vied with both an older and a younger brother, particularly the latter, who was not

only successful in business, but also in getting into the Service, whereas the patient was rejected. He grew up in a family of successful men —father, older, and younger brother, always fighting to hold his own, and failing to gain the admiration which his younger brother, in particular, received from his mother. Herewith a picture is demonstrated of competition accompanied by attacks of rage and strong unconscious strivings, in an effort to receive affection and attention from women, so that he vied with a younger, successful brother, and later on with his own young son at the expense of gastric symptoms and severe headaches.

In the foregoing cases, we recognize strong competitive trends, slowly building up in efforts to obtain position, power, or security, and striving against inferiority feelings and dependent needs. Thus the clinician must be ever mindful of strong competitive tendencies as evidence of conscious and underlying unconscious conflicts operating in an individual living in a society, itself highly competitive, where by many, success in competition is considered the hallmark of success. He must be mindful of the ever-growing techniques used by the ego in dealing with dependency problems, inferiority feelings, and rivalries for love and prestige, as well as aware of the social and cultural patterns that promote and provoke competition.

We see, for example, the "big shot" in every walk of life with strong strivings and egoism—a familiar figure of our day in business and politics. We may see, too, the glamour boy or playboy, struggling against strong passive-receptive tendencies by competing for a place in the news; or the individual eccentric, whose techniques bring him into recognition, largely in the Hollywood scheme of things, competing for recognition with various novel and socially bizarre antics.

We have also some individuals combining in groups the better to compete successfully with a minimum of anxiety. As a team, or group, or brotherhood, they more effectively defy and undermine authority, or as a gang or wolf-pack, more daringly exploit their competitive aggressions with more deadly effect.

We see, too, a growing phenomenon of competitive teams; in medicine for example, man and wife, combining their skills by interlocking their efforts in various fields of work —two pediatricians, for instance, husband and wife; or the husband in internal medicine and the wife in psychiatry; or in our own specialty, the husband in general psychiatry and the wife in psychoanalysis; or there may be an organization built around the plan for successful competition by combining forces around a successfully competitive person as a nucleus to constitute group practice or a clinic. In brief, many such arrangements to compete more successfully are found in all variations, covering all social and antisocial fields of human endeavor.

The whole matter of competition brings us face to face with a frank appraisal of characteristic sexual strivings one encounters. Only too often we find the passive-receptive male who is insecure and who may flee from entering competition directly, yet attaches himself to a competitive person or group, and in this way, competes; or again, he may often defend himself against his passive-receptive tendencies with an extremely competitive drive: often in this case, exhibiting the classical evidence of American success in terms of money and power, but only to be frequently hospitalized for gastric and cardiac distress; particularly the former, so often tied up with early receptive-dependent needs. We find, too, those individuals who act out these conflicts in circumstances more easily tolerated by the personal or social ego, and accordingly are not provoked by discomfort to turn to the psychiatrist. We also see among women today, a more competitive picture, showing evidence of strong masculine strivings, many of which are not only sanctioned, but encouraged and exploited by society when talents and abilities warrant, and the individual finds the opportunity. Engaging in such competition, she often blends poorly or clashes with the opposite sex, or uses homosexual relationships as a means to avoid anxiety and frustration, frequently resulting in the need for psychiatric care.

In summary, we find a growing need for an adequate and proper appraisal of the neurotic competitive trends encountered in our patients, and also for an appreciation of the competitive trends found on a non-neurotic basis, where competition is entered into for the pleasure of it, and for the sportsmanlike enjoyment afforded in all of our various sports and intellectual pursuits today. It is

evident, too, that we must remain aware of the factor of competition in its broadest aspects, both in the individual and in society, recognizing it as an index of unconscious trends encountered in handling personality factors, the roots of which may constitute the neurosis of today.

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Concomitance of an Extra-Pyramidal Syndrome and Epilepsy

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Infrequently convulsive phenomena may set in shortly after the onset of encephalitis lethargica. The literature reports a number of cases of this type. The onset of epileptoid or genuine epileptic seizures in the midst of a fully developed Parkinsonian syndrome long after the acute onset of encephalitis is also a matter of record. As to the varieties of epilepsy, all forms of the latter may be encountered. Grand mal seizures with their usual complete clinical picture, viz.: sudden loss of consciousness, tonic, clonic muscular contractions, incontinence of sphincters, deep sleep and subsequent amnesia, — all may occur. Petit mal attacks in all their varieties: sudden loss of consciousness, without any motor phenomena, sudden confusion, sudden disorientation, sudden loss of speech, sudden mutism, etc.,—all these may occur. Such observations by competent writers are reported in the literature.

In the present contribution, however, reference is made exclusively to the cases of epilepsy which did not exist before the onset of extra-pyramidal manifestations. The object of this communication is to call attention to cases in which epilepsy made its appearance and persisted in the midst of a fully developed extra-pyramidal symptom-group a long time after the acute onset of the latter, also to a logical anatomical relationship of one nosological entity to the other. Moreover, attention is equally called to the fact that the subject under discussion does not have reference to cases of extra-pyramidal type in the course of which convulsive phenomena may supervene, but caused or provoked by factors encountered in the histories of epileptics in general, such as old traumata, infectious diseases in childhood, alcoholism, saturnism, etc. In the two cases described the absence of etiological agents other than involvement of the extra-pyramidal structures argues strongly in favor of subcortical causes of epilepsy. The two cases can be placed alongside but not to be considered identical with those observed in Wilson's disease in which spasmodic contractions of a tonic character are mentioned by the author, nor are they identical to instances of isolated individual tonic, clonic choreic, or tetanic manifestations in diseases of the basal ganglia in pseudosclerosis reported by various authors.

In the present contribution one does not observe epileptoid phenomena, but the complete clinical group with all the details of genuine epileptic attacks: in the first case typical grand mal, in the second both grand and petit mal. These exceptional circumstances justify placing them on record.

Case I: N.G., a traveling agent, 41 years old, presented no previous personal medical history of any value. One sister died of tuberculosis. One cousin had a history suggesting a psychosis. A maternal grandparent had epilepsy. The patient was in good physical health up to the age of 27. At that time, while living in the Phillipines, he had an attack of encephalitis lethargica. Two years later he returned to the United States presenting a typical picture of Parkinsonism. It was then that epileptic seizures began to make their appearance: sudden loss of con-

sciousness, tonic followed by clonic convulsive movements, involuntary micturition, and the usual post-epileptic stupor. The onset of the attacks was not preceeded by any provocative or precipitating factor or chemical agent.

The man was of a very conservative type; never had had a venereal disease, Wasserman reaction was negative. He used no alcohol, did not smoke. During the last two years he has had ten epileptic attacks. He calls attention to a new symptom observed by his wife during the last two attacks, namely rapid jerking of the eyeballs, at first laterally and then they remain fixed on the left side during the entire attack and for ten minutes after it. He did not experience petit mal attacks. His Parkinsonism is typical: facies, mask-like; rigidity of attitude; rapidity of speech and of gait; involuntary tremor.

Case II: T.D., An accountant, 37 years old, was stricken at 29 with encephalitis lethargica. After a severe course of the disease, marked by fluctuations which kept him confined to bed for six months, he gradually developed a typical picture of right-sided Parkinsonism: awkwardness of movements of arm and leg, some rigidity, loss of emotional expression in the face, marked tremor of hand, leg, lips, tongue, also oculo-gyric movements and difficulty of speech. His condition remained unaltered until the age of 33 when he commenced to have attacks of petit mal consisting of sudden loss of orientation with total mutism, both lasting a few moments. At times he would suddenly let drop objects held in the left hand without realizing it and this was accompanied by a sensation of "cloudiness" (his own expression) of memory. Later, upon awakening at night, he would find himself on the floor, the bed clothes disarranged and saturated with urine.

About six months later he commenced to have diurnal convulsive seizures, confined to the right side of his body. The petit mal attacks were more frequent than the grand mal. The latter occurred at rare intervals. They were typical in all details.

The patient's entire medical history, prior to the encephalitis, was negative. He drank no alcoholic beverages; there was no history of venereal disease; Wasserman was negative. In the family history two cases of epileptiform attacks were mentioned; one in a first cousin (male), the other in a maternal uncle.

The two cases herein described suggest instances of a close relationship between a post-encephalitic pathological state of the extra-pyramidal structures and epilepsy. The personal medical histories of both patients exclude any other evident causative factor of epilepsy, either in childhood or in adult life. This effliction made its appearance during the chronic stage of encephalitis lethargica. It is well known that in Parkinsonism the lesion is focused around and about the striatal neuronal system, consisting of a gradual degeneration and subsequent atrophy of the striatum and of the radiations of the lenticular nucleus. Since in encephalitis lethargica the vascular supply is involved not only in the mid-brain but also in other portions of the central nervous system the late development of epilepsy may be attributed to this. Convulsions may occur from irritation not only of the motor cortex, but of subcortical centers.

Experimentally it has been shown that epileptic convulsions may persist following decortization. Many lesions in various portions of the cerebrum between its anterior and posterior poles, at its base, over its vertex and its interior may initiate epilepsy. The site of the lesion may not necessarily be in the motor area itself. Any segment of the brain possesses epileptogenous properties. The mechanism of epileptic convulsions lies fundamentally in the disturbed function of the cortical motor cells, the impulses of which are influenced by morbid foci in any region of the intracranial tissue (See Holmes, Arch. of Internal Med., 1915, Vol. 16, p. 213; Luce, Deut. Ztschr. f. Nervenh, 15, 1899, p. 329; A. Gordon, J. Nerv. and Ment. Dis., 5:61, 1925, p. 142).

In concluding this study, special attention is called to the presence of epilepsy in the family histories of both patients and of a psychosis in the family history of one. The consensus of opinion of the majority of observers is in favor of hereditary predisposition. Heredity in all such cases creates presumably a functional exaggeration of the dynamism of the nervous system, which in presence of some organic lesions will be transformed into epilepsy. Hereditary predis-

position may remain latent for many years until some disorganization in cerebral equilibrium takes place, such as acute or chronic intoxication (alcoholism, saturnism, syphilitic infection), or, finally, when some organic disease of the brain supervenes. The latter precisely occurred in my cases in the form of encephalitis lethargica.

The special interest of the present contribution is found therefore in:-

1) Two cases of a concommittance of post-encephalitic Parkinsonism and typical epilepsy.

2) The latter made its appearance when the former entered its chronic phase.

3) The fact of late development of epilepsy is in conformity with our anatomo-pathological conception of progressive degeneration of striatal connections with the rest of the cerebrum.

4) The development of epilepsy on a hereditary basis in cases of brain disorganization by reason of an encephalitis which became progressively chronic.

5) Confirmation of the opinion of some writers concerning sub-cortical epilepsy.

6) The rarity of genuine epilepsy in its complete clinical form following an organic involvement of the extra-pyramidal structures, especially in view of the description of epileptoid (not epileptic) muscular manifestations (chorea, athetosis, myoclonia) of the majority of writers. Mention should be made of C. I. Urechia's work as a similar exception. (L'Encéphale; 34; 1939: p. 42).

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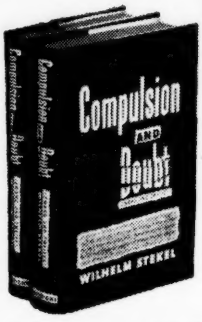

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